Presentation Title:	Streamflow Criteria and Permitting Scenarios
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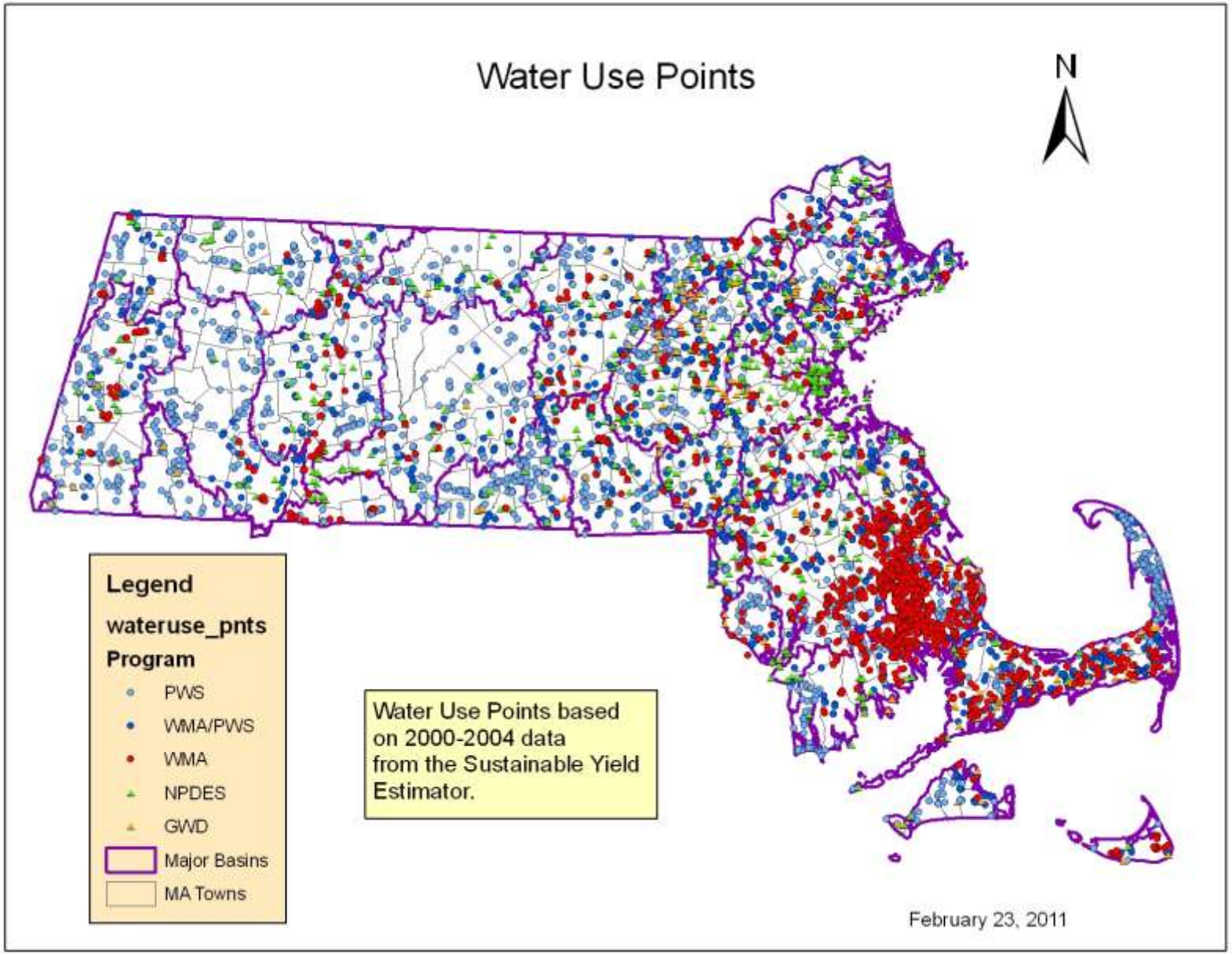
STREAM FLOW CRITERIA AND PERMITTING SCENARIOS

Sustainable Water Management Initiative

Technical Subcommittee

March 8, 2011



WMA Existing Permit Conditions

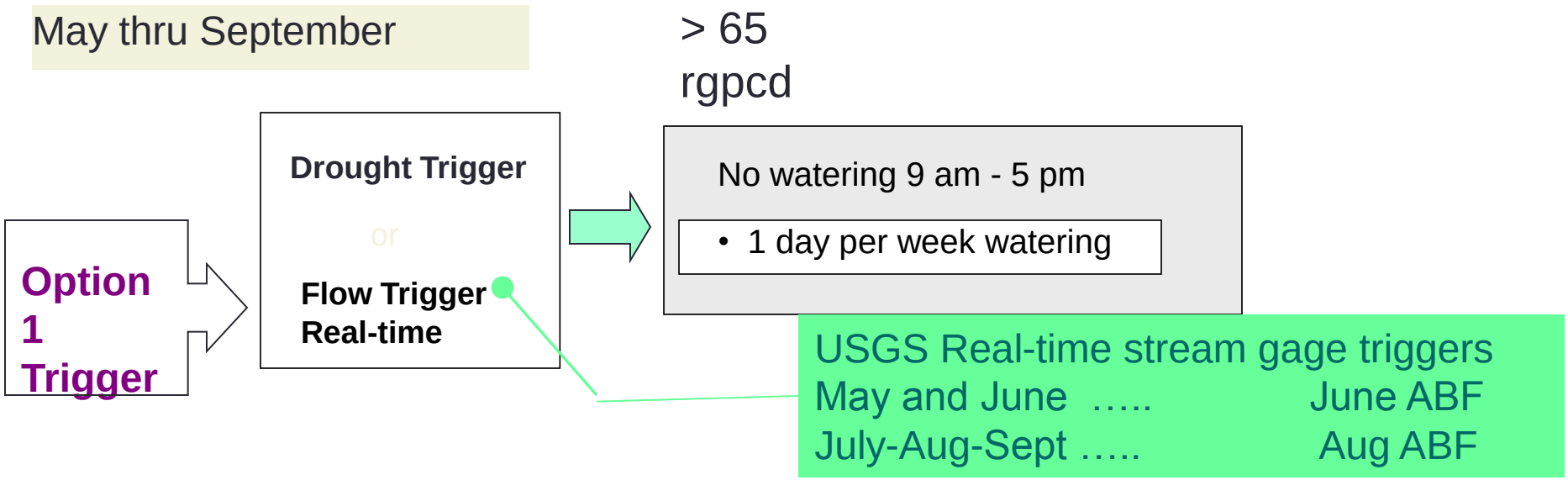
1. Surface water and groundwater source protection
2. Firm yield analysis for PWS surface water impoundments
3. Wetlands and vernal pool monitoring
4. Performance standard: 65 residential gallons/capita/day
5. Performance standard:10% unaccounted-for-water
6. Seasonal limits on nonessential outdoor water use
   - Calendar or stream flow trigger
7. Water conservation requirements
   - Water audits, leak detection, metering, pricing, residential and public sector including municipal buildings
8. Water withdrawal increases that exceed baseline
   - Offset Feasibility Study

Baseline:
Based on water use for designated period

Limits on Nonessential Outdoor Water Use

Permit Requirement

Water Use Restriction Allowance on Withdrawals



- If below 65 RGPCD, permittee implements their own plan with DEP minimums of nonessential outdoor water use from 9 am to 5 pm.
- Exemptions may apply to communities with seasonal populations and/or water supply reservoirs.

Stream Flow Criteria

Fluvial Fish Relative Abundance	
Biological Category (BC)	August Percent Alteration
1	< 5%
2	< 15%
3	< 35%
4	< 65%
5	> 65%

	% allowable alteration of estimated unimpacted median flow*			
Flow Level (FL)	AUG	OCT	JAN	APR
1	< 5%	< 5%	< 5%	< 5%
2	< 15%	< 5%	< 5%	< 5%
3	< 35%	< 15%	< 15%	< 15%
4	Feasible mitigation and improvement			
5				

- Existing PWS with alteration levels higher than those shown on the chart will be required to maintain and where feasible improve their flow level.

- *Surface water supplies will be evaluated through a separate metric.

Tier Permit Review

Tier 1 Review

No increase requested, no increase above baseline

Tier 2 Review

- Increase above baseline use or increase resulting in less than 5% additional alteration to estimated unaffected flow and would not change biological category or flow level

Tier 3 Review

- Increase would alter estimated unaffected flow by more than 5% and/or would result in a change in biological category or flow level

Permit Conditions – Tier 1

Scenario 1: No increase in withdrawal

(no increase above baseline annual volume)

Existing permit conditions 1 thru 8 apply

In Flow Level 4 or 5, or

in the presence of a coldwater fishery:

- Conduct a pumping optimization evaluation

Permit Conditions – Tier 2

Scenario 2: Withdrawal increase …

- less than 5% simulated unaffected flow
  and
- maintains BC/FL stream category flow threshold

- Permit conditions 1 thru 8 apply
- In a coldwater fishery*, consultation with DEP/other agencies required to scope potential mitigations measures for evaluation**
- Conduct and submit an Offset/Mitigation Study
- Permittee may get credit for mitigation already implemented
- Mitigation requirements subject to DEP annual review

*Consultation may also be required in Stream category 4 &5

**Potential mitigations based on DEP's offset feasibility guidance, NEWWA & MWWA Toolbox

Permit Conditions – Tier 3

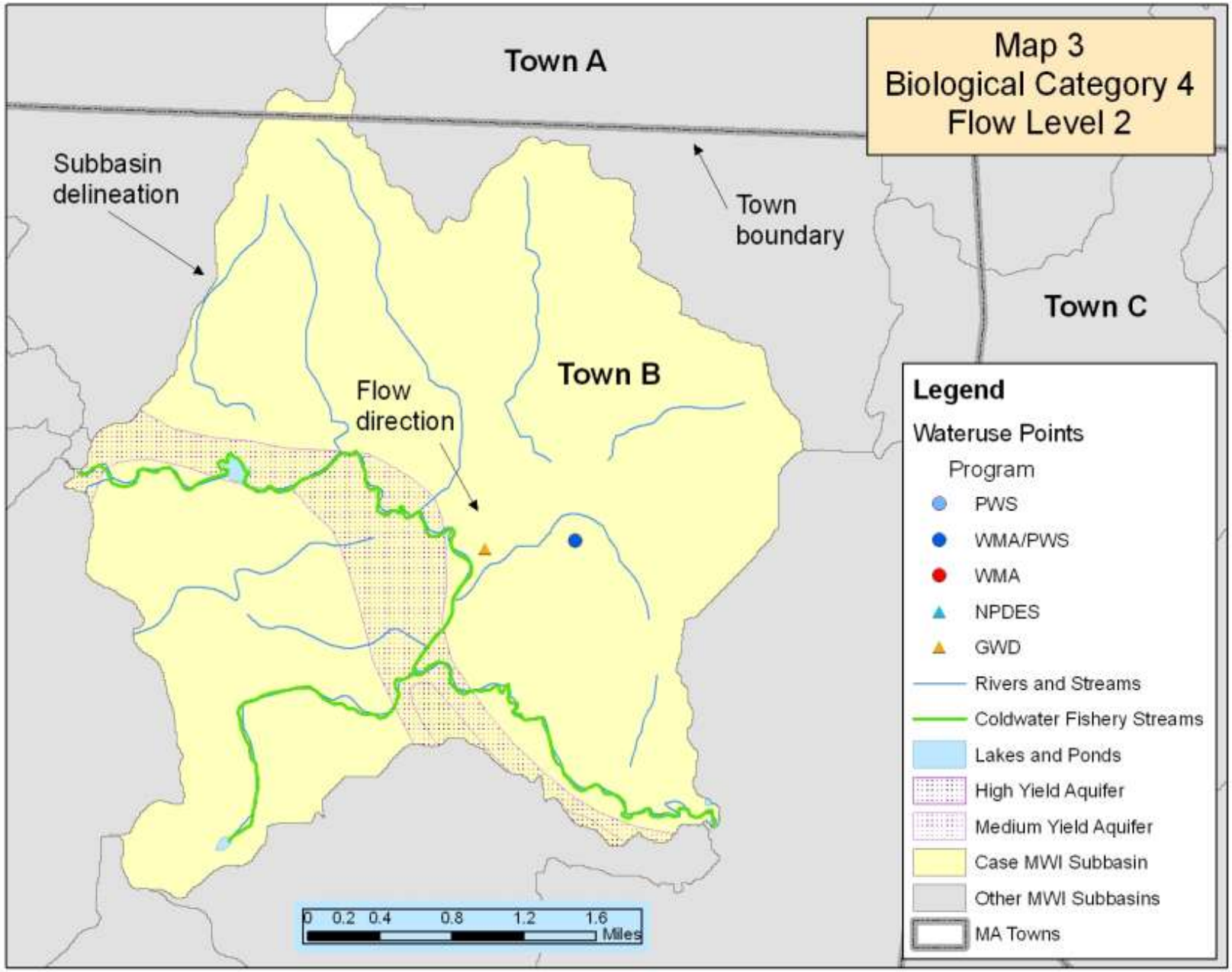
Scenario 3: Withdrawal increase …

- exceeds 5% simulated unaffected flow threshold
  or
- exceeds BC/FL stream category flow threshold

A water withdrawal increase may be allowed for Water Management Act considerations provided that certain conditions are met*

*Conditions such as:
-No alternative
- Water Needs Forecast
-WRC Water Conservation Standards

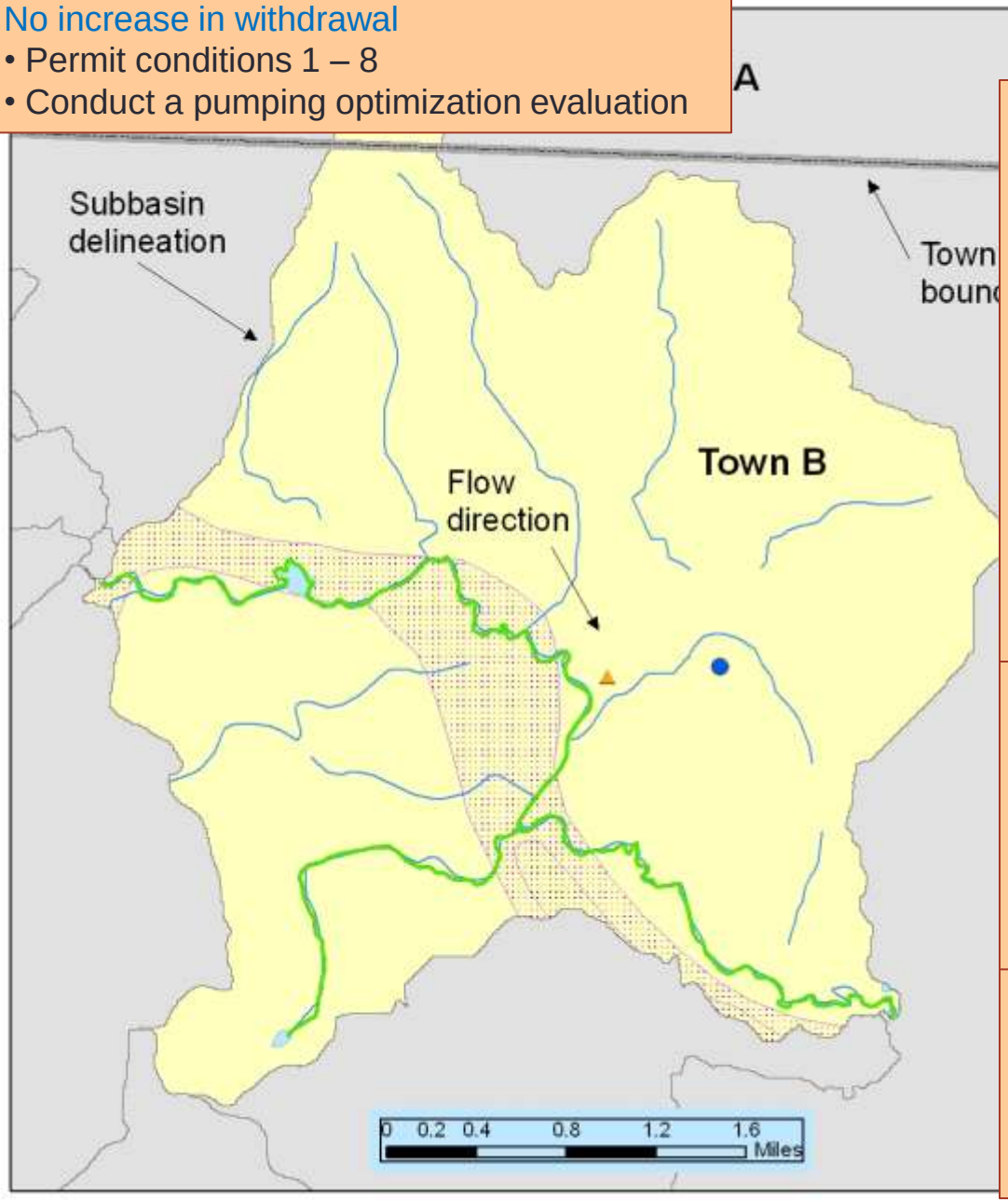
- Conduct and submit an Alternative Analysis
- Permit conditions 1 thru 8 apply
- Consultation with DEP/other agencies required to scope potential mitigation measures for evaluation
- Conduct and submit an Offset/Mitigation Study
- Permittee may get credit for mitigation already implemented
- Mitigation requirements subject to DEP annual review



Tier 1

No increase in withdrawal

- Permit conditions 1 – 8
- Conduct a pumping optimization evaluation



Case Example

BC/FL: 4/2
Local Drainage area: 11.09 sq.mi.
Nested Drainage area: 53.32 sq.mi.
Local Impervious cover: 6.05%
Nested Impervious cover: 4.79%
Estimated August percent alteration: -5.73%
Coldwater Fishery Resource present

Flow thresholds:

- 0.47 mgd remaining in BC/FL category
- 0.44 mgd within 5% unaffected August median flow

Tier 2

Increase in withdrawal is above baseline but does not exceed either flow threshold

+ Consult with DEP/other agencies
+ Conduct an Offset Feasibility Study

Tier 3

Increase in withdrawal is above baseline and exceeds a flow threshold

+ Conduct an Alternative Analysis

Potential Mitigation Options

Mitigation options for Tier 2 and Tier 3 Permit Conditions

Recognize that offset/mitigation should be commensurate with withdrawal. Methods for developing a list of commensurate offset and mitigation measures and the manner in which credit is to be given for these projects must still be discussed.

1. Prohibit nonessential outdoor water use
2. Private well bylaw
3. Ban/regulate automatic irrigation systems
4. Conservation rate structure
5. Water banking
6. Enterprise account
7. Conservation/mitigation project
8. Land acquisition/ Conservation Restrictions
9. Improvements to fish passage
10. Streambank restoration
11. Protection of stream buffers
12. Dam removal
13. Instream habitat improvements
14. Stormwater bylaw
15. Stormwater utility/district
16. Model land use water protection bylaw
17. Reduce infiltration/inflow
18. Wastewater reuse/return
19. Sponsor a USGS stream gage
20. Adopt code for greater water efficiency